

which carries out environmental and technical research related to lead and zinc market applications.

The Product Research Centre had 28 employees at year-end.

#### Electronic Materials

Research and development expenditures in the field of electronic materials totalled \$2.9 million in 1987.

New process technology is being developed for the purification of arsenic and gallium to special grades optimized for gallium arsenide production. Major efforts continue to be focused on the improvement of technology for the manufacture of compound semiconductors including gallium arsenide, cadmium telluride, and cadmium mercury telluride. As a result of a program to develop epitaxial

cadmium mercury telluride as a new product, a Certificate of Merit in the Innovation category of the Canada Awards for Business Excellence was received from the Government of Canada in 1987. Research is continuing on the development of detector-grade germanium single crystal.

Cominco Electronic Materials successfully completed Canada's first industrial experiment in space in 1987. A rocket launched from the Swedish Space Corporation's Esrange facility contained cadmium mercury telluride samples for crystallization experiments under near zero gravity conditions.

Research and development continued on rapid solidification casting and powder metallurgical processing methods.

A new company, Crystar Research Inc., was established in Victoria, B.C.

to extend capabilities into the field of advanced optical materials which are finding increasing application in high technology products. Crystar is producing the first large synthetic sapphires grown in Canada, with optical quality crystals weighing up to 20 kilograms.

The Electronic Materials operations located in Trail, those of Cominco Electronic Materials Incorporated in Spokane, and Crystar Research Inc. had 42 employees directly engaged in research and development activities at year-end.

### Production and Sales Statistics

Twelve Months Ended December 31

		1987		1986	
		Sales	Production	Sales	Production
<b>Refined Metal</b>					
Zinc					
Trail	tons	218,100	210,300	265,800	266,900
Tolled — Polaris	tons	—	—	7,400	5,700
		218,100	210,300	273,200	272,600
Lead					
Trail	tons	83,200	87,700	123,500	122,300
Silver <sup>1</sup>	ounces	7,596,600	7,615,000	8,709,500	8,810,000
Gold					
Highland Valley Copper (55%)	ounces	3,700	3,700	800	800
Con	ounces	—	—	88,200	88,300
Trail	ounces	38,900	38,800	21,400	21,400
Buckhorn	ounces	27,800	28,000	28,500	29,300
		70,400	70,500	138,900	139,800
<b>Concentrates<sup>2</sup></b>					
Zinc					
Sullivan	tons	—	144,800	—	176,200
Polaris	tons	221,800	227,100	181,400	200,700
Magmont	tons	11,900	12,000	10,800	10,800
Pine Point	tons	13,200	533,000	—	457,800
		246,900	916,900	192,200	845,500
Lead					
Sullivan	tons	—	115,800	—	127,600
Polaris	tons	36,500	37,000	40,000	35,300
Magmont	tons	52,800	49,500	56,400	56,800
Pine Point	tons	164,900	163,300	156,100	163,800
		254,200	365,600	252,500	383,500
Copper <sup>3</sup>					
Highland Valley Copper (55%)	tons	95,000	95,000	43,000	43,000
Valley	tons	—	1,000	23,500	22,500
Magmont	tons	1,400	900	1,000	900
		96,400	96,900	67,500	66,400
Molybdenum <sup>3</sup>					
Highland Valley Copper (55%)	tons	1,700	1,700	1,100	1,200

<sup>1</sup>Includes silver sold in concentrates and intermediate products.

<sup>2</sup>Sales tonnages exclude concentrates processed at Trail and concentrates tolled through other smelters which are reported as refined metal sales.

<sup>3</sup>Tonnages are for metal contained in concentrate.